[illegible], [illegible]; [illegible]

[illegible] repeated cesarean section. Akush. i gin. [illegible] no.2:106-109 [illegible]. (MIRA 18:10)

1. Moskovskiy oblastnoy [illegible] institut [illegible] i ginekologii (direktor - zasluzhennyy vrach RSFSR C.D.Matspaneva; nauchnyy rukovoditel' - prof. A.V.Lankovits).

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000510020009-4"

DEMIDKIN, V.A.

PHASE I BOOK EXPLOITATION SOV/4386

Moscow. Fiziko-khimicheskiy institut

Problemy fizicheskoy khimii; trudy, vyp. 2 (Problems in Physical Chemistry; Transactions of the Institute, no. 2). Moscow, Goskhimizdat, 1959. 202 p. 1,000 copies printed.

Editorial Board: Ya. M. Varshavskiy, Doctor of Chemical Sciences; G. S. Zhdanov, Doctor of Chemical Sciences; V. A. Kargin, Academician; Ya. M. Kolotyrkin, Doctor of Chemical Sciences (Resp. Ed.); S. S. Medvedev, Academician; S. Ya. Pshenzhetskiy, Doctor of Chemical Sciences; V. M. Cherednichenko, Candidate of Chemical Sciences; V. S. Chesalova (Editorial Secretary), Candidate of Chemical Sciences; Ed.: I. A. Myasnikov; Tech. Ed.: Ye. G. Shpak.

PURPOSE: This collection of articles is intended for physical chemists.

COVERAGE: The collection is the second issue of the Transactions of the Scientific Research Institute of Physical Chemistry imeni L. Ya. Karpov. It contains 17 articles which review

Card 1/5

GIRGOR'YEVA, T.S., prof.; DEMIDKO, A.S., khirurg mediko-sanitarnoy chasti

Prophylaxis and treatment of small lesions of the workers' hand in the mechanized assembly shops of the "Uralelektroapparat" Factory. Zdrav. Ros. Feder. 5 no.9:23-28 S '61. (MIRA 14:9)

1. Iz kafedry gospital'noy khirurgii pediatricheskogo i sanitarno-gigiyenicheskogo fakul'teta Sverdlovskogo meditsinskogo instituta (rektor - prof. A.F.Zverev) i mediko-sanitarnoy chasti zavoda "Uralelektroapparat" (glavnyy vrach M.A.Lychanaya).
(HAND--WOUNDS AND INJURIES)

DEMIDKO, M.Ye.; LOS', M.D.

New SRNM-4 transplanter. Kons. i ov. prom. 13 no.3:23-25 Mr '58.
(MIRA 11:4)

1. Yuzhno-Ukrainskaya mashinoispytatel'naya stantsiya.
(Planters (Agricultural machinery))

DEMIDKO, M.Ye., inzh.

Performance of cultivators and disc plough harrows at high speeds. Trakt. i selkhozmash. 32 no.3:29-31 Mr '62. (MIRA 15:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sel'skokhozyaystvennogo mashinostroyeniya.
(Agricultural machinery)

DEMIDO, A.G.

Assimilation of food following total gastrectomy. Zhur.ob. biol. 20 no.2:19-24 Mr-Ap '59. (MIRA 12:5)

1. Iz otdeleniya bolezney organov pishchevareniya (zav. - prof. O.L.Gordon) Kliniki lechebnogo pitaniya Instituta pitaniya AMN SSSR, Moskva.

(GASTRECTOMY,
total, postop. food assimilation (Rus))
(FOOD,
assimilation after total gastrectomy (Rus))

DEMIDO, A. G.

Cand Med Sci - (diss) "Assimilation of food in patients after total resection of the stomach." Moscow, 1961. 19 pp;(Academy of Medical Sciences USSR); 250 copies; price not given; (KL, 7-61 sup, 258)

DEMIDO, N. N.

"The Process of Debismuthization of Lead according to Materials of the Study of the Equilibrium in the Ternary System Pb-Bi-Ca." Min Higher Education USSR, Moscow Inst of Nonferrous Metals and Gold imeni M. I. Kalinin, Chair of the Metallurgy of Heavy Metals, Moscow, 1955
(Dissertation for the Degree of Candidate of Technical Sciences)

SO: Knizhnaya Letopis', No. 32, 6 Aug 55

Demido, N.M.

137-58-5-9321

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 5, p 76 (USSR)

AUTHOR: Demido, N.M.

TITLE: A Process of Bismuth Removal From Lead Based on a Study of the Equilibrium in the Ternary System Pb-Bi-Ca (Protsess obezvismuchivaniya svintsa po materialam izucheniya ravnovesiya v troynoy sisteme Pb-Bi-Ca)

PERIODICAL: Sb. nauchn. tr. Severo-Kavkazsk. gorno-metallurg. in-t, 1957, Nr 14, pp 197-204

AESTRACT: The lead region of the phase diagram of the Pb-Bi-Ca system was studied by methods of physicochemical analysis. It is shown that a phase with variable composition - a ternary solid solution in which Pb is the solvent - undergoes crystallization at a temperature near the melting point of Pb. One type of crystals so obtained is similar in composition to Bi_2Ca_3, while another resembles Pb_3Ca. Experimental data were employed in determining the Bi distribution between the liquid and crystalline phases. It was established that the Bi may be removed from Pb with the aid of Ca alone if high temperatures and an inert shielding atmosphere are used; a method of computing Ca consumption is developed. 1. Bismuth-calcium-lead alloys--Analysis 2. Bismuth--Separation 3. Metallic crystals--Phase studies

Card 1/1 L.P.

POGORELYY, A.D.; DEMIDO, N.M.; MATVEYEV, I.I.

Regularities in the performance of multi-compartment flotation machines. Izv. vys. ucheb. zav.; tsvet. met. 4 no.6:16-25 '61. (MIRA 14:12)

1. Severokavkazskiy gornometallurgicheskiy institut, kafedra obshchey metallurgii.
(Flotation--Equipment and supplies)

POGORELYY, A.D.; DEMIDO, N.M.; KUZNETSOV, N.N.

Certain problems in the theory of leaching. Izv.vys.ucheb.zav.; tsvet.met. 3 no.2:54-64 '60. (MIRA 15:4)

1. Severokavkazskiy gornometallurgicheskiy institut, kafedra obshchey metallurgii.
(Leaching)

POGORELYY, A.D.; DEMIDO, N.M.; KUZNETSOV, N.N.

Certain regularities in the continuous leaching process. Izv. vys. ucheb. zav.; tsvet. met. 5 no.4:60-72 '62. (MIRA 16:5)

1. Severokavkazskiy gornometallurgicheskiy institut, kafedra obshchey metallurgii.

(Leaching)

DEMIDO, N.M.

Investigating the regularities of continuous leaching for the case of nonequivalent amounts of solid and reagent. Izv. vys. ucheb. zav.; tsvet. met. 8 no.1:52-57 '65. (MIRA 18:6)

1. Severokavkazskiy gornometallurgicheskiy institut, kafedra obshchey metallurgii.

S/084/60/000/008/002/005
A104/A029

AUTHOR: Demidov, A., Air Force Engineer

TITLE: Mobile Hangar for Maintenance of Helicopters

PERIODICAL: Grazhdanskaya Aviatsiya, 1960, No. 8, p. 26

TEXT: The author describes briefly a mobile hangar for winter maintenance of Mi-1 (Mi-1) helicopters designed by efficiency experts V. Skorobogatov, Kh. Ivanov and V. Puzikov. The hangar takes four men and consists of slopped plywood walls which are connected at the top with three wooden beams and fixed in snow by cramp-irons. Front, rear and upper walls are lined with hard-wearing material. The hangar shown in photograph can be assembled by two men in 30 - 40 minutes. It can be easily transported by Mi-4 (Mi-4) helicopters or An-2 (An-2) aircraft. There is 1 photograph.

Card 1/1

DEMIDOV, A., polkovnik; GAZETOV, V., podpolkovnik

Engineer arrangements on the march of a tank battalion. Voen. vest. 41 no.3:31-33 Mr '62. (MIRA 15:4)
(Military field engineering) (Tanks (Military science))

DEMIDOV, A., polkovnik

Helicopters in combat engineering reconnaissance. Voen. vest. 42 no.10:87-90 O '62. (MIRA 15:10)
(Helicopters) (Military reconnaissance)

DEMIDOV, A.A.

BLINOVA, V.N.; DEMIDOV, A.A.; KOLIN, Ya.S.; MAKUSHKIN, Ya.G.; MYZIN, L.M.; PERMYAKOV, N.P.; PONEDILKO, A.I.; BOROVIK, Z.G.; YEFREMOV, I.A.; KOPAYGORODSKIY, A.B.; MARINOV, A.M.; NEKHOROSHKOVA, O.I.; POKROVSKIY, A.F.; ROMANOVSKIY, A.A.; RASSADNIKOV, Ye.I., red.; SAVEL'YEV, V.I., red.; FRIDKIN, A.M., tekhn.red.

[Electric power in the Urals during the past 40 years] Energetika Urala za 40 let. Moskva, Gos. energ. izd-vo, 1958. 141 p. (MIRA 11:5)

(Ural Mountain region--Electric power)

5 (2)

AUTHORS: Demidov, A. A., Gorbunova, L. B. SOV/32-25-8-19/44

TITLE: Spectrum Method for the Determination of Impurities in Carbon and Graphite of a High Degree of Purity

PERIODICAL: Zavodskaya laboratoriya, 1959, Vol 25, Nr 8, pp 956 - 957 (USSR)

ABSTRACT: A method for the determination of impurities of Si, Fe, Mg, Al, and other elements in carbon and graphite of a high degree of purity was developed in which the method of enrichment of the impurities according to A. G. Karabash and Sh. I. Peysulayev (Ref 1) before the spectrum analysis, was applied. The sample is burned with beryllium oxide (I), which serves as collector, in a muffle furnace, thus, after the burning all the impurities are concentrated on the (I) and can be spectrographically determined up to a concentration of 10^{-3} - 10^{-5}%. The used electrode was of spectrally pure Kudinov carbon previously calcined. The spectra of the samples and of the standard samples are simultaneously photographed with two spectrographs, a KS-55 (with a quartz optic) and an ISP-51 (with a camera UF-84), but a spectrograph ISP-22 can be used as well. Spectroscopic photo-

Card 1/2

graphic films of type II with a sensitivity of 22 units of GOST were used. The relative error of analysis is indicated to be 25-30%. The article lists analysis results of several graphites and of the Kudinov spectrally pure carbon (Table). There are 1 figure, 1 table, and 1 Soviet reference.

DEMIDOV, A.A.

Some structural characteristics of rocks in the Lower Carboniferous terrigenous formation of the Tatar A.S.S.R. Biul. MOIP. Otd.geol. 37 no.3:70-79 My-Je '62. (MIRA 15:10)
(Tatar A.S.S.R.—Petrology)

SARKISYAN, S.G.; KLIMOVA, L.T.; ARUTYUNOVA, N.M.; DEMIDOV, A.A.; SOLOVKIN, A.N., otv. red.

[Conditions governing the formation of the Lower Carboniferous terrigenous layer of Kuybyshev Province] Usloviia obrazovaniia terrigennoi tolshchi nizhnego karbona Kuibyshevskoi oblasti, Tatarii i Bashkirii. Moskva, Izd-vo "Nauka," 1964. 77 p. (MIRA 17:7)

DEMIDOV, A.D., inzh.

Improving the organization of fully prefabricated housing construction. Gor.khoz. Mosk. 35 no.2:11-14 F '61. (MIRA 14:2)
(Moscow--Precast concrete construction)

DEMIDOV, A.

AID P - 403

Subject : USSR/Aeronautics

Card 1/1 Pub. 135, 17/18

Author : Demidov, A., Lt. Col., Eng. Dotsent, Kand. of Tech. Sci.

Title : Explosion waves

Periodical : Vest. vozd. flota, 83-95, Ag 1954

Abstract : The author explains in popular terms the mechanics of sound waves, shock waves, and explosion waves. Diagrams.

Institution : None

Submitted : No date

GROSHEV, L. V.; DEMIDOV, A. I.; KOTEL'NIKOV, G. A.; LUTSENKO, V. N.; PELEKHOV, V. I.

"Levels of the Nucleus Rh^{104} Excited by the Capture of Thermal Neutrons."

reports submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22 Feb 64.

IAE(Inst Atomic Energy, AS USSR)

KARASEV, V.K.; KATSEV, P.G.; DEMIDOV, A.L.; SOLODOVNIK, S.F.

Inventors suggest. Mashinostroitel' no.2:30-31 F '65.
(MIRA 18:3)

GROSHEV, L.V.; ADO'YASEVICH, B.P.; DEMIDOV, A.M.

[Investigation of gamma rays emitted by nuclei in the capture of thermal neutrons] Issledovanie gamma-luchei, ispuskaemykh iadrami pri zakhvate teplovykh neitronov. Moskva, 1955. 36 p. (MIRA 14:7)

(Neutrons--Capture) (Gamma rays)
(Nuclei, Atomic)

DEMIDOV A.M.

4

X-Ray spectra of neutron capture by some heavy nuclei. B. P. Adyasevich, L. V. Groshev, and A. M. Demidov. *Sessiya Akad. Nauk S.S.R. po Mirnomu Ispol'zovaniyu Atomnoi Energii, Zasedaniya Otdel. Fiz.-Mat. Nauk* 1955, 270-9(Russian); English summary, 293).—The results of measurements are given of the γ-ray spectra emitted by Cd, Sm, Hg, and Pb under neutron irradiation in the thermal column of the RIT reactor. The γ-ray spectra were measured in a magnetic spectrometer, where the Compton electrons produced in a thin radiator were sorted according to their energy. This instrument covered the energy range from 0.1 to 2 m.e.v. A large no. of peaks corresponding to monochromatic γ-rays were detected in the γ-ray spectra of Cd, Sm, and Hg. The corresponding γ-ray energies and the intensities expressed in photons/neutron capture were detd. There was satisfactory agreement with the values of other authors. γ-Decay schemes are drawn for Sm^{150}, Cd^{110}, and Hg^{201}. The γ-ray spectrum of Pb was measured after thermal neutron capture, thus one ground state transition was found both for Pb^{207} and Pb^{205}. Here, too, agreement with data by other authors is satisfactory. The neutron binding energies were detd. as 8.00 ± 0.03 m.e.v. for Sm^{150} and 8.03 ± 0.03 m.e.v. for Hg^{201}, with angular moments of the compd. nuclei of 0⁻ for Hg^{201} and 4⁻ for Sm^{151}; thus the ground state spin for Sm^{149} must be 7/2⁻. Multipolar orders and partial widths have been detd. for a no. of Cd, Sm, and Hg transitions, and the partial widths are compared with those obtained according to Weisskopf (*C.A.* 41, 1073g). 10 references.

Werner Jacobsen

(2)

DEMIDOV, A. M., ADYASEVICH, B. P., GROSHEV, L. V.,

"Investigation of Rays Emitted by the Nuclei in Capture of Thermal Neutrons," International Conference on the Peaceful Uses of Atomic Energy, 1955. A/Conf. 8/P/651 (USSR). Translation available at Battelle Memorial Institute.

Thermal Neutron capture gamma radiation from nuclei has investigated with the aid of a Compton-electron magnetic spectrometer. The sample under investigation was irradiated with thermal neutron flux from the RTF reactor. Spectra of beryllium, sodium, sulphur and chlorine gamma rays have been measured in the energy range from 0.3 to 10 Mev. The treatment of results obtained made it possible to deduce the intensities of some spectral lines in terms of photons per neutron capture. For a number of transitions experimental radiation probabilities were compared with theoretical ones calculated from Weisskopf's formulas. Spins of some of the lower levels of Cl^{36} and Na^{24} were determined.

Investigation of slow-neutron-capture γ-rays from calcium, nickel, and potassium. [illegible] Adyasevich, L. V. Groshev, A. M. Demidov, and B. N. Lutsenko. *Atomic Energy* (U.S.S.R.) (English translation) 1, No. 2 (Pub. in *J. Nuclear Energy* 3, 325–40 (1956)). — The energies and intensities of thermal-neutron-capture γ-rays in the 0.15–12-m.e.v. energy range from Ca, Ni, and K have been measured by a magnetic spectrometer by using analysis of the Compton electrons. [illegible]

DEMIDOV, A. M.

USSR/Nuclear Physics - Structure and Properties of Nuclei, C-4

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34004

Author: Ad'yasevich, B. P., Groshev, L. V., Demidov, A. M., Lutsenko, V. M.

Institution: None

Title: Investigation of Gamma Rays Emitted by Nuclei of Calcium, Nickel, and Potassium During Capture of Thermal Neutrons

Original Periodical: Atom. Energiya, 1956, No 2, 28-39

Abstract: A magnetic spectrometer for analysis of Compton electrons is used to measure the energies and intensities of gamma rays, emitted by nuclei of Ca, Ni, and K when they capture thermal neutrons. The spectra of the gamma rays were studied in the energy interval 0.25-12 Mev. The intensities of the gamma lines are given in gamma-quanta per 100 neutron captures. The possible schemes of gamma transitions in the nuclei Ca^{41}, Ni^{59}, Ni^{61}, and K^{40} have been compiled.

1 of 1

Demidov A.M.

C-4

USSR/Nuclear Physics - Structure and Properties of Nuclei

Abst Journal : Referat Zhur - Fizika, No 12, 1956, 34001

Author : Ad'yasevich, B. P., Groshev, L. V., Demidov, A. M.

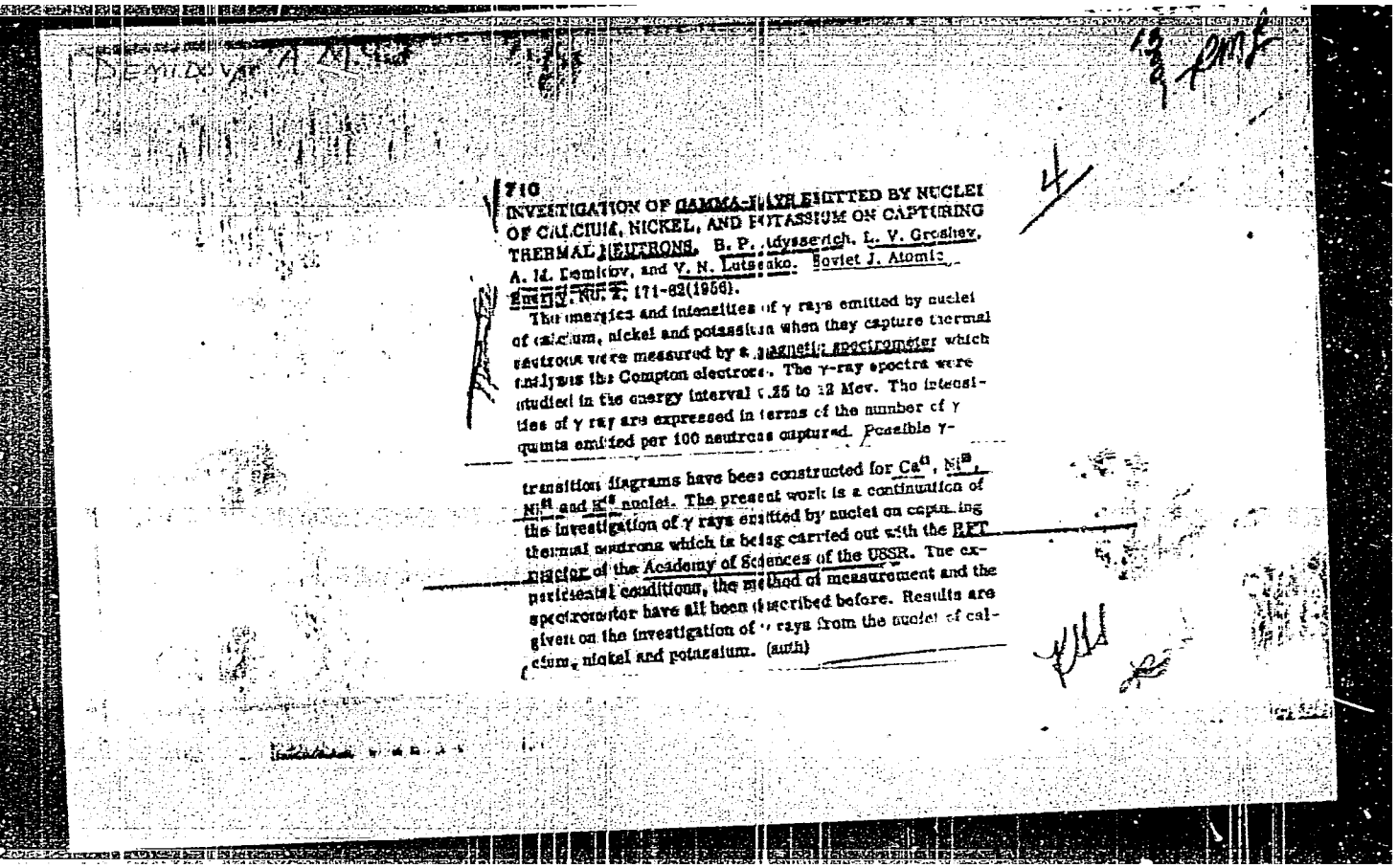
Institution : None

Title : Investigation of Gamma Rays Emitted by Nuclei of Titanium, Iron, and Silicon during Capture of Thermal Neutrons

Original Periodical : Atom. energiya, 1956, No 2, 40-49

Abstract : A magnetic spectrometer which analyzes Compton electrons was used to measure the energies and intensities of gamma rays occurring during the capture of thermal neutrons in Ti, Fe, and Si. The gamma ray spectra were studied in the energy interval between 0.25 and 12 Mev. The intensities of the gamma rays are expressed in numbers of gamma quanta/100 captures of neutrons. Possible schemes of gamma transitions in the nuclei of Ti^{49}, Fe^{57}, and Si^{29} have been compiled.

Card 1/1



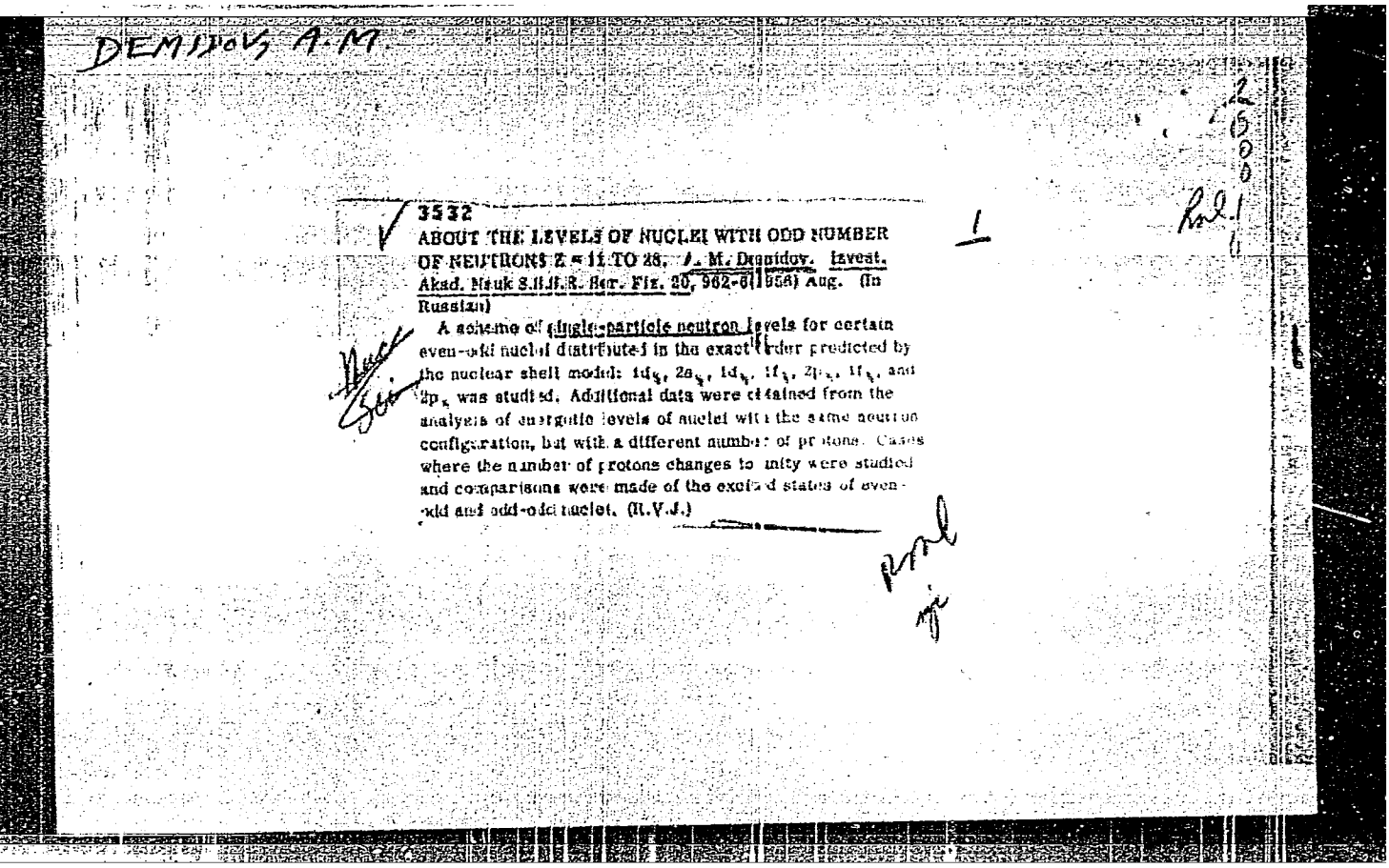
710
INVESTIGATION OF GAMMA-RAYS EMITTED BY NUCLEI OF CALCIUM, NICKEL, AND POTASSIUM ON CAPTURING THERMAL NEUTRONS. B. P. Adyasevich, L. V. Groshev, A. M. Demidov, and V. N. Lutsenko. Soviet J. Atomic Energy, No. 2, 171-82(1956).

The energies and intensities of γ rays emitted by nuclei of calcium, nickel and potassium when they capture thermal neutrons were measured by a magnetic spectrometer which analyzes the Compton electrons. The γ-ray spectra were studied in the energy interval 0.25 to 12 Mev. The intensities of γ ray are expressed in terms of the number of γ quants emitted per 100 neutrons captured. Possible γ-transition diagrams have been constructed for Ca^{41}, Ni^{59}, Ni^{61} and K^{41} nuclei. The present work is a continuation of the investigation of γ rays emitted by nuclei on capturing thermal neutrons which is being carried out with the RFT reactor of the Academy of Sciences of the USSR. The experimental conditions, the method of measurement and the spectrometer have all been described before. Results are given on the investigation of γ rays from the nuclei of calcium, nickel and potassium. (auth)

711

INVESTIGATION OF GAMMA-RAYS EMITTED BY NUCLEI OF TITANIUM, IRON, AND SILICON ON CAPTURING THERMAL NEUTRONS. B. P. Adyasevich, L. V. Groshev, and A. M. Demidov. Soviet J. Atomic Energy, No. 2, 183-92(1956).

The energies and intensities of γ rays arising when thermal neutrons are captured in titanium, iron and silicon were measured by a [illegible] spectrometer which analyzes the Compton electrons. The γ-ray spectra were studied in the energy interval 1.15 to 11 Mev. The intensities of the γ rays are expressed in terms of the number of γ quanta per 100 neutron captures. Possible γ-transition schemes have been constructed for Ti^{48}, Fe^{56} and Si^{28} nuclei. The present work is a continuation of the study of γ spectra, emitted by nuclei after capturing thermal neutrons, carried out with the aid of a magnetic γ spectrometer. In the present paper are given the results of the measurement of the energies and of the intensities of γ rays emitted by the nuclei of titanium, iron and silicon. The measurement of the intensity (number of γ quanta per capture) was carried out by means of determining the radiated energy to the binding energy of the neutron in the nuclei under investigation. (auth)



DEMIDOV A.M.

3532

ABOUT THE LEVELS OF NUCLEI WITH ODD NUMBER OF NEUTRONS Z = 11 TO 28. A. M. Demidov. Izvest. Akad. Nauk S.S.S.R. Ser. Fiz. 20, 962-6 (1956) Aug. (In Russian)

A scheme of single-particle neutron levels for certain even-odd nuclei distributed in the exact order predicted by the nuclear shell model: $1d_{\frac{5}{2}}$, $2s_{\frac{1}{2}}$, $1d_{\frac{3}{2}}$, $1f_{\frac{7}{2}}$, $2p_{\frac{3}{2}}$, $1f_{\frac{5}{2}}$, and $2p_{\frac{1}{2}}$ was studied. Additional data were obtained from the analysis of energetic levels of nuclei with the same neutron configuration, but with a different number of protons. Cases where the number of protons changes to unity were studied and comparisons were made of the excited states of even-odd and odd-odd nuclei. (R.V.J.)

DEMIDOV, A. M., GROCHEV, L. V., LUTSENKO, V. N., and PELEKHOV, V. I., AS USSR

"Spectra of Gamma Rays from Radiative Capture of Thermal Neutrons for Even-Even radioactive Nuclei with Rotational Levels," a paper submitted at the International Conference on the Neutron Interactions with the Nucleus, New York City, 9-13 Sep 57.

Abstract available in C-3,800,344

[redacted], A. M., and GROCHEV, L. V., AS USSR

"Characteristics of Gamma Transitions in Light odd-Odd Nuclei, Formed in the Captrue of Thermal Neutrons," a paper presented at the International Conference on the Neutron Interactions with the Nucleus, New York City, 9-13 Sep 57

Abstract available in C-3,800,344

DEMIDOV, A.M.

89-8-2/20

AUTHOR GROSHEV, L.V., DEMIDOV, A.M.

TITLE Nuclear Multiplets in Light Odd-Odd Nuclei and Their Manifestation in γ-Transitions Following Thermal Neutron Capture
(Yadernyye multiplety v legkikh nechetno-nechetnykh yadrakh i ikh proyavleniye v γ-perekhodakh posle zakhvata teplovogo neytrona. Russian)

PERIODICAL Atomnaya Energiya, 1957, Vol 2, Nr 8, pp 91 - 100 (U.S.S.R.)

ABSTRACT On the basis of the comparison of the hitherto experimentally found γ-transitions in even-odd (odd neutron) and even-even nuclei with $A < 60$, the presence of nuclear multiplets near the ground state is proved. The following nuclei were investigated:

$_{11}Na^{24}$, $_{12}Mg^{25}$, $_{13}Al^{28}$, $_{14}Si^{29}$, $_{15}P^{32}$, $_{16}S^{33}$, $_{19}K^{40}$, $_{20}Ca^{41}$, $_{21}Sc^{46}$, $_{22}Ti^{49}$, $_{23}V^{52}$, $_{24}Cr^{53}$, $_{25}Mn^{56}$, $_{26}Fe^{57}$, $_{28}Ni^{59}$.

(With 7 tables, 6 illustrations, 6 Slavic references).

ASSOCIATION Not given

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SUBMITTED 28.2.1957

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Card 1/1

DEMIDOV, A M

89-9-1/32

AUTHOR: GROSHEV,L.V., DEMIDOV,A.M., LUTSENKO,V.N., PELEKHOV,V.I.

TITLE: Investigation of the γ-Rays Emitted by the Nuclei of V, Mn, Co, Al on the Occasion of the Capture of Thermal Neutrons. (Issledovaniye γ-luchey, ispuskayemykh yadrami V, Mn, Co, Al pri zakhvate teplovykh neytronov)

PERIODICAL: Atomnaya Energiya, 1957, Vol 3, Nr 9, pp 187 - 203 (U.S.S.R.)

ABSTRACT: The energies of the γ-quanta were measured by means of a scintillation spectrometer. The γ-energies can, for comparison with other nuclear reaction measurements, be arranged in level schemes. The following levels (in MeV) were found with individual nuclei:

$V^{51}(n,\gamma)V^{52}$	$Mn^{55}(n,\gamma)Mn^{56}$	$Co^{59}(n,\gamma)Co^{60}$	$Al^{27}(n,\gamma)Al^{28}$
29 γ-lines	41 γ-lines	40 γ-lines	25 γ-lines
Niveaus in V^{52}	Niveaus in Mn^{56}	Niveaus in Co^{60}	Niveaus in Al^{28}
0,13	0,11	0,060	0,03
0,42	0,21	0,286	0,97
0,87	0,308	0,445	1,37
0,83	0,47	0,513	1.63
1,40	1,15	0,557	2,14
1,48	1,32	0,622	2,28

Card 1/2

Demidov, A. M.

48-12-10/15

AUTHORS: Groshev, L. V. , Demidov, A. M. , Naydenov, V. A.

TITLE: Spectra of Electrons of Internal Conversion Which are Emitted in Captures of Thermal Neutrons by the Samarium-, Cadmium- and Gadolinium-Nuclei (Spektry elektronov vnutrenney konversii, ispuskayemykh pri zakhvate teplovykh neytronov yadrami samariya, kadmiya i gadoliniya)

PERIODICAL: Izvestiya AN SSSR, Seriya Fizicheskaya, 1957, Vol. 21, Nr 12, pp. 1619 - 1623 (USSR)

ABSTRACT: The spectra of electrons of internal conversion which develop in the radiation n, γ were investigated here. For this a magnet spectrometer was used with electrical recording of the electrons by counters placed far apart and connected to the coincidence-scheme. The apparatus was not the very best, as it possessed comparatively small light intensity and dissolving power. The measuring method and the apparatus are described in reference 4. The only difference consisted in the fact that the neutrons from the one of the channels of the reactor (PTR) immediately passed into the camera of the spectrometer and impinged upon the investigated sample. Sample 3 x 4 cm^2. The investigation of the line with 130 keV at a thickness of the sample of 0,78 Mcm^{-2} and 0,31 Mcm^{-2} in the spectrum

Card 1/2

Spectra of Electrons of Internal Conversion Which are Emitted in Captures of Thermal Neutrons by the Samarium-, Cadmium- and Gadolinium-Nuclei

of a Gd-sample showed that the peak-area in this range of thickness still increases linearly with the thickness of the sample. The data obtained for the energies and the multipolarity of the transitions in the investigated nuclei are given in a table. At energies of the electrons below 100 keV an essential decrease in the coefficient δ_2 was observed beside a widening of lines. The finding of the line-intensity became unreliable here and therefore at electron-energies below 100 keV no multipolarity for the peaks was determined. Multipolarities were determined for transitions with energies of 337 and 444 keV in Sm^{150}, 553 keV in Cd^{114}, 197 keV in Gd^{156}, 180 keV in Gd^{158}. For all these transitions may be assumed that they are transitions of the type E 2 which also is in agreement with the results of other works (references 1 - 3). There are 4 figures, 2 tables, and 9 references, 2 of which are Slavic.

AVAILABLE: Library of Congress

Card 2/2

GROSHEV, L.V.; DEMIDOV, A.M.; LUTSENKO, V.N.; PELEKHOV, V.I.

[Atlas of gamma spectra of radiative capture of thermal neutrons] Atlas spektrov γ-luchei radiatsionnogo zakhvata teplovykh neitronov. Izd-vo Glavnogo upravleniia po ispol'zovaniiu atomnoi energii, 1958. 198 p. (MIRA 13:3)
(Gamma rays--Spectra) (Neutrons--Capture)

DEMIDOV, A. M.

AUTHORS: Groshev,L.V., Demidov,A.M.,Lutsenko,V.N.,Pelekhov,V.I. 89-1-1/29

TITLE: γ Ray Spectra Emitted by Even-Even Nuclei With Rotational Levels if the Nuclei Captured Thermal Neutrons (Spektry γ -luchey radiatsionnogo zakhvata neytronov dlya chetno-chetnykh izluchayushchikh yader s vrashchatel'nymi urovnyami)

PERIODICAL: Atomnaya Energiya, 1958, Vol. 4, Nr 1, pp. 5-21 (USSR)

ABSTRACT: By means of a magnetic Compton spectrometer the γ -spectra (E = 0.3-9 MeV) are measured and the following lines are obtained:

E γ in MeV

Gd^{157} (n.γ)	Gd^{155} (n.γ)	Gd(n.γ)	Er(n.γ)	Hf(n.γ)	Dy(n.γ)	Ta(n.γ)
6.74±0.01	7.33±0.03	(0.69±0.02)	6.680±0.015	6.39±0.04	5.87±0.02	6.04±0.02
6.44±0.03	6.74±0.03	(0.64±0.02)	6.202±0.015	6.14±0.02	5.580±0.015	5.94±0.03
5.88±0.03	6.40±0.035	0.55±0.02	6.07± 0.03	5.730±0.012	5.15±0.02	5.80±0.03
5.62±0.03	~4.3		5.88± 0.03	5.49±0.03	4.65±0.04	5.54±0.03
~5.2	1.24±0.02		5.73± 0.04	5.34±0.03	4.10±0.025	5.36±0.03

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4.92±0.04	1.17±0.02	5.34±0.03	4.92±0.03	3.48±0.03	5.24±0.03
1.33±0.02	1.06±0.02	4.770±0.035	4.80±0.45	3.14±0.03	4.99±0.03
1.26±0.02	(0.96±0.02)	4.66±0.03	4.54±0.04	3.04±0.03	4.83±0.03
1.185±0.015		4.420±0.045	4.385±0.015	2.86±0.03	
1.110±0.015		4.1	1.415±0.015	2.74±0.025	
0.96±0.02		1.9	1.339±0.015	0.42±0.02	
0.800±0.015		1.3	1.30±0.02		
0.78±0.02		1.01±0.02	1.220±0.015		
		0.94±0.02	1.180±0.015		
		0.828±0.01	1.090±0.015		
		0.736±0.015			
		0.64±0.02			

Some γ-quanta of the nuclei can be well classified in level schemata. The following levels are excited with certainty:

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γ Ray Spectra Emitted by Even-Even Nuclei With Rotational Levels if the Nuclei Captured Thermal Neutrons 89-1-1/29

Gd^{158} E γ in MeV	Gd^{156} E γ in MeV	Er^{168} E γ in MeV
0	0	0
0.08	0.089	0.080
0.26	0.287	0.265
1.11	1.17	1.08
1.20	1.24	1.28
1.25	8.46	1.80
1.40		7.76
7.87		

There are 15 figures, 11 tables, and 26 references, 5 of which are Slavic.

SUBMITTED: August 31, 1957

AVAILABLE: Library of Congress

Card 3/3

DEMIDOV, A. M., Candidate Phys-Math Sci (diss) -- "The spectra of gamma-rays released in the capture of thermal neutrons by nuclei with Z=11-28". Moscow, 1959. 7 pp (Min Higher Educ USSR, Moscow Engineering Phys Inst), 100 copies (KL, No 23, 1959, 160)

DEMIDOV, A. M.

21(0) PHASE I BOOK EXPLOITATION SOV/2081

International Conference on the Peaceful Uses of Atomic Energy, 2d., Geneva, 1958

Doklady sovetskikh uchenykh; yadernaya fizika (Reports of Soviet Scientists; Nuclear Physics) Moscow, Atomizdat, 1959. 552 p. (Series: Its: Trudy, Vol. 1) 8,000 copies printed.

Eds. (Title page): A.I. Alikhanov, Academician; V.I. Veksler, Academician; and N.A. Vlasov, Candidate of Physical and Mathematical Sciences; Ed. of this volume: S.I. Drozdov and B.V. Zaretskiy, Candidates of Physical and Mathematical Sciences; Ed. (Inside book): G.L. Shulyan; Tech. Ed.: Ye.I. Mazel'.

PURPOSE: This collection of articles is intended for scientific research workers and other persons interested in nuclear physics. The volume contains 43 papers presented by Soviet scientists at the Second Conference on Peaceful Uses of Atomic Energy, held in Geneva in September 1958.

COVERAGE: It is divided into two parts. Part I contains 17 papers dealing with plasma physics and controlled thermonuclear reactions, and Part II contains 26 papers on nuclear physics, including problems of particle acceleration and of cosmic ray physics. The first paper by L.A. Artsimovich presents a review of Soviet work on controlled thermonuclear reactions. The remaining papers in Part I deal with particular problems in this field. [illegible] papers in Part II deal in detail with various problems in nuclear physics, such as the fission of heavy atoms and their isotopes, and with the study of cosmic radiation by means of artificial earth satellites and rockets, described in a paper by S.N. Vernov. The Russian-language edition of the proceedings of the conference is published in 16 volumes. The first 6 volumes contain all the papers presented by Soviet scientists as follows: Volume (1), Yadernaya fizika (Nuclear Physics); Volume (2), Yadernyye reaktory i yadernaya energetika (Nuclear Reactor and Nuclear Power); Volume (3), Yadernoye goryucheye metally (Nuclear Fuel and Reactor Metals), Volume (4), Khimiya radioelementov i radiatsionnykh prevrashcheniy (Chemistry of Radioelements and of Radiation Transformations); Volume 5, Radiobiologiya i radiatsionnaya meditsina (Radiobiology and Radiation Medicine); Volume (6) Poluchenie i primeneniye izotopov (Production and Use of Isotopes). The other 10 volumes contain selected papers presented at the Conference by non-Soviet scientists. In the present volume discrepancies between the English and Russian language edition of the proceedings have been noted in three articles where the texts are not identical; viz; Andrianov, et al, "High Current Pulsed Discharge"; Akhiyezer, et al, "High Frequency Plasma Oscillation"; and Bogolyubov, "Investigations of the Many-body Problem". The serial numbers of reports 2302 and 2504 are reversed in the English edition. Report 2211, by Sinelnikov, et al, is numbered 2536 in the English edition.

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Reports of Soviet Scientists; Nuclear (Cont.) SOV/2081

21(7) SOV/89-6-3-5/29

AUTHORS: Groshev, L. V., Gavrilov, B. I., Demidov, A. M.

TITLE: Investigation of γ-Radiation Emitted by Nuclei at Capture of Thermal Neutrons (Issledovaniye γ-luchey, ispuskayemykh yadrami pri zakhvate teplovykh neytronov)

PERIODICAL: Atomnaya energiya, 1959, Vol 6, Nr 3, pp 281 - 289 (USSR)

ABSTRACT: The Compton- (Kompton) spectrometer used in the measurement of the γ-spectra has already been described in reference 2. The spectrometer was located in such a way opposite to the target and the neutron irradiation duct of the reactor WR of the AS USSR, as to expose only the target to the direct neutron and γ-beam from the active zone of the reactor. The γ-radiation originating from the target was collimated over a length of 3650 mm by means of 7 lead diaphragms. The predominating weakness of the spectrometer is its unusually high γ-background, which is caused by its being placed very near to the reactor. In order to suppress this background the whole spectrometer was surrounded by a water tank and paraffin bricks, respectively, and the measuring chamber of the spectrometer was protected by a lead shield about

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10 cm thick. The intensity and the energy of the γ-radiation originating from neutron capture was measured for the following nuclei: P, Sc, Cr, Cu, Zn, Sn, and Sb. The values obtained generally show a good agreement with values determined earlier. The preparations of the individual element were treated as follows: P_2O_5 was put into a bakelite box, which could be sealed hermetically. The preparation was besides inserted into an aluminum casing with a wall thickness of 1 mm. The target had a diameter of 140 mm, a length of 120 mm and a weight of 1.5 kg. Caused by the presence of the intensive capture γ-lines originating from the hydrogen, lead and aluminum in the preparation it was impossible to record the γ-spectrum of P^{32} in the range of 3.22 and >7 MeV. Sc_2O_3. The target had a diameter of 100 mm and a weight of 25 g. The preparation was housed in a graphite container. No measurements could be conducted in the range of 2.23 and ~ 7.38 MeV due to the intensive background caused by the reaction $H(n,\gamma)D$, $Pb^{207}(n,\gamma)Pb^{208}$.

Cr_2O_3: The target had a diameter of 120 mm, a length of 10 mm and a weight of 1 kg. The γ-spectrum of the chromium isotopes 53 and 54 could not accurately be recorded in the range of 7.38 MeV.
Cu and Zn: The targets consisted of a ring with a diameter of 110 mm and a thickness of 20 mm. They weighed 1.7 and ~ 1.3 kg, respectively. The target was exposed to the incident neutron beam at an angle of 45°. The background was in the range of 7.38 MeV very weak. For this reason this region could be measured for these two elements. A. S. Volkov prepared and performed the stabilization and the measurement of the magnetic field. There are 7 figures, 4 tables, and 13 references, 5 of which are Soviet.

SUBMITTED: November 17, 1958

21(9) SOV/89-7-3-11/29

AUTHORS: Groshev, L. V., Demidov, A. M.

TITLE: The Spectrum of γ-Rays of the IRT Reactor

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 3, pp 257-258 (USSR)

ABSTRACT: A channel tube extending as far as the reactor core of the IRT-reactor is partly filled with boron carbide and paraffin and a lead screening substance. In the lead screening substance there is a thin central channel, through which the γ-quanta produced in the reactor core reach a γ-spectrometer described in reference 2. The γ-spectrum of the core is superimposed by a number of γ-lines, which originate from the (n,γ)-processes on Al (the material from which the reactor is built), C (graphite reflector) U^{235} and U^{238} and from the radioactive nuclei produced in these processes. If these γ-lines are eliminated from the measured spectrum, the γ-spectrum corresponding to the core of the IRT-reactor remains. Both spectra are graphically represented. For the latter, the relative intensity of each γ-domain, i.e. divided into 11 intervals, from 0.2 - 7,72 Mev is in addition tabulated. The IRT-spectrum is distinguished from the spectrum of the RFT-reactor especially

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The Spectrum of γ-Rays of the IRT Reactor

by the fact that in the latter the high-energy part of the spectrum is more pronounced, because here iron, nickel, and chromium are used as building materials, and because the (n,γ)-processes on these elements have a great yield. There are 1 figure, 1 table, and 3 Soviet references.

SUBMITTED: May 4, 1959

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21 (1)

AUTHORS: Groshev, L. V., Demidov, A. M. SOV/89-7-4-2/28

TITLE: On M1-Transitions From Highly Excited States

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 4, pp 321-328 (USSR)

ABSTRACT: First, a short report is given on earlier papers dealing with this subject. It is of interest, on the basis of the single-particle model to investigate the probabilities of M1-transitions from the initial state for such nuclei as lie within the same range of atomic weights. First, the forbidden M1-transitions under investigation in the single-particle model are discussed. The authors confine themselves to analyzing the M1-transitions of even-odd nuclei produced in a reaction (n, γ). In nuclei with A of from 20 to 60 M1-transitions were found to occur in the nuclei Mg^{25}, Si^{29}, S^{33}, and Ca^{41}. The M1-transitions from the initial state lead to levels with characteristics $1/2^+$ or $3/2^+$. For determining the order of this prohibition of the investigated M1-transitions it is necessary to compare their probabilities with those of the permitted transitions, which are determined by the formulas for the single-particle model. Table 1 contains the radiation widths and the densities of the

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neutron-s-resonances of the nuclei with A = 20 to A = 40. These data are very inaccurate and, in some cases, even wrong. The second rather voluminous table gives data concerning M1-transitions from the initial states of even-odd nuclei. This table also contains the characteristic properties of the states between which a transition occurs. All M1-transitions may be subdivided into two large groups which differ by the amount of the variation of the orbital moment of the neutron in the transition. The M1-transition in Si^{29}, which leads to a level with isotropic distribution of protons in the reaction (d,p), is given in addition. The next part deals with the causes for canceling the prohibition. In heavy nuclei with odd atomic weights a large number of forbidden M1-transitions with $\Delta l = 2$ is found to occur between the lower levels. The experimental data on these transitions are discussed in more detail in an appendix. The following causes do not come into consideration according to the authors' opinion: (1) Interaction by the exchange of charges and spins between two nucleons. (2) Spin orbit coupling. (3) Coupling of nucleons and the surface oscillations of the nucleus. The most natural

explanation for the observed probabilities of the M1-transitions is apparently the mixing of the probabilities of M1-transitions in the initial and final state. The last part of the present paper deals with M1-transitions in odd-odd nuclei. Also in this case the transitions are subdivided into groups according to the variation Δl_n, and, besides, a transition in Na^{24} to the level with the energy of 0.47 Mev is sorted out. An appendix deals with M1-transitions between the weakly excited states of heavy nuclei. There are 2 figures, 4 tables, and 28 references, 6 of which are Soviet.

SUBMITTED: May 15, 1959

DEMIDOV, A. M., LUTSENKO, N. V., PELEKHOV, V. I., GROSHEV, L. V.

"(n,γ) Reactions Studies at the IRT Reactor of the USSR Academy of Science."

paper presented at the Symposium of the International Atomic Energy Agency on Pile Neutron Research in Physics, Vienna, 17-21 Oct 1960.

Institute for Atomic Energy imeni I. V. KURCHATOV, of the USSR Academy of Sciences.

S/048/60/024/007/002/011
B019/B060

26.2264

AUTHORS: Groshev, L. V., Demidov, A. M., Lutsenko, V. N., Malov, A. F.

TITLE: A Magnetic Gamma Spectrometer 19 With High Resolving Power

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya., 1960, Vol. 24, No. 7, pp. 791-801

TEXT: This is the reproduction of a lecture delivered at the 10th All-Union Conference on Nuclear Spectroscopy held in Moscow from January 19 to 27, 1960. The authors describe a new magnetic Compton spectrometer which allows the gamma spectrum to be measured in the energy range of 0.3-12 Mev with a resolution of 0.3% at $h\nu > 2$ Mev. Resolution becomes poorer at lower energies. Fig. 1 shows a scheme of the experimental arrangement, in which the spectrometer described here was used and which served for investigating the spectrum of gamma emission caused by the capture of thermal neutrons. The sample investigated was placed in a core-tangential channel of an MPT(IRT) reactor near the core and was collimated with iron and lead diaphragms. The neutrons were filtered by means of a 10 cm thick paraffin

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A Magnetic Gamma Spectrometer With High Resolving Power S/048/60/024/007/002/011 B019/B060

layer. The novelty in the spectrometer described here consists in that the energy of the Compton electrons is analyzed with two different magnetic fields. The first axisymmetric magnetic field is produced in a device called separator and collects the Compton electrons coming from the converter by means of a horizontal and a vertical slit on a counter C_1. The electrons then reach a magnetic analyzer, the β-spectrometer proper and are there again collected on a counter C_2. In the experiment, the dependence of the number of pulse coincidences in the counters C_1 and C_2 on the magnitude of the analyzer field is measured, the separator field changing with the analyzer field. The authors then give formulas (1) and (2) which describe the magnetic field. In the following sections, they describe the capture angles of electrons, the resolving power, the spectral sensitivity of the spectrometer and its construction in great detail. The authors finally thank D. V. Pavlov for his calculation of the magnet system, I. M. Kamyshev for having designed the instrument and for having provided the drawings, A. S. Volkov for having worked out the electronic equipment, and the reactor team for their assistance in the measurements. There are 8 figures and 12 references: 6 Soviet, 5 US, and 1 Swedish.

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A magnetic gamma spectrometer...

layer. The novelty in the spectrometer described here consists in that the energy of Compton electrons is analyzed with two different magnetic fields (Fig. 2). In the so-called separator the Compton electrons ejected from the converter (K) are collected by an axisymmetric field, pass through a horizontal and a vertical slit, then a counter D_1, reach a magnetic analyzer serving as β-spectrometer, are again collected, pass through a third slit, and hit the counter C_2. In the experiment, the dependence of pulse coincidences in the counters C_1 and C_2 on the analyzer field is measured, the separator field changing with the analyzer field. The authors then give formulas

$$H(r) = H_0\left[1 - 0{,}80\,\frac{r - r_0}{r_0} + 0{,}65\left(\frac{r - r_0}{r_0}\right)^2\right]. \qquad (1)$$

$$H(R) = H_0\left[1 - \frac{1}{2}\left(\frac{R - R_0}{R_0}\right) + \frac{1}{8}\left(\frac{R - R_0}{R_0}\right)^2 + \frac{1}{16}\left(\frac{R - R_0}{R_0}\right)^3\right] \qquad (2)$$

which describe the radial variation of the magnetic fields in the separator and analyzer, respectively. In the sections coming next, they de-

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A magnetic gamma spectrometer...

scribe the capture angles of electrons, the resolving power, the spectral sensitivity of the spectrometer, and its construction in great detail. D. V. Pavlov is thanked for his calculation of the magnetic system, I. M. Kamyshev for having designed the device and for having provided the drawings, A. S. Volkov is thanked for having worked out the electronic equipment, and the reactor team for their assistance in the measurements. There are 8 figures, 1 table, and 12 references: 6 Soviet-bloc and 6 non-Soviet-bloc.

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S/048/60/024/007/016/032/XX
B019/B056

24.6600

AUTHORS: Groshev, L. V., Demidov, A. M., and Lutsenko, V. N.

TITLE: The Spectrum of the γ-Rays From the $Cl^{35}(n,\gamma)Cl^{36}$ Reaction 19

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 7, pp. 833-838

TEXT: This paper was read on the 10th All-Union Conference on Nuclear Spectroscopy, which took place from January 19 to January 27, 1960 at Moscow. The authors investigated the spectrum of the γ-rays, which are formed during the capture of thermal neutrons by Cl^{35}. The measurements were carried out by the new magnetic Compton spectrometer (Ref. 2), which is described in this issue, on NaCl samples (50.100.190 mm). The γ-spectra obtained are shown in Fig. 1 ($h\nu$ = 4.8 - 8.7 Mev) and Fig. 2 ($h\nu$ = 0.2 - 4.8 Mev). A detailed discussion is given on the nature of the background in the reactor channel and in the converter. The Table gives the energies and the intensities of the γ-lines. In the first column of this Table, the numbers are given, by means of which the corresponding lines in the spectrum represented in Figs. 1 and 2 are denoted, in the

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The Spectrum of the γ-Rays From the $Cl^{35}(n,\gamma)Cl^{36}$ Reaction

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B019/B056

second column the energies, and in the third the intensities of the lines are given. On the basis of the data given in Table 1, the γ-transition scheme shown in Fig. 3 was set up, for which data from an investigation of the (d,p) reaction carried out by Paris et al. (Ref. 4) were used. Special interest was paid to the neighboring 1.957 Mev and 1.949 Mev levels, and this part of the γ-transition scheme is discussed more in detail on the basis of the section of the scheme shown in Fig. 4. In the diagram of Fig. 5 the position of the two levels in the spectrum is shown. In a detailed discussion, three variants of transitions are discussed, but it is finally found that the data at present available permit no opinion to be expressed on the correctness of one or the other variant.
There are 5 figures, 1 table, and 11 references: 4 Soviet, 6 US, and 1 Norway.

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DEMIDOV, A.M

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24.6520

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B006/B014

AUTHORS: Groshev, L. V., Demidov, A. M., Pelekhov, V. I.

TITLE: Spectra of Gamma Rays Occurring in the Capture of Thermal Neutrons by Heavy Nuclei. I.

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 2, pp. 588 - 597

TEXT: In recent years the authors have measured the gamma spectra found in radiative capture of thermal neutrons of numerous elements. The data obtained are published in a map issued in 1958 and in a series of articles (Ref. 2). In the article under review, the authors describe some rules governing the gamma spectra of heavy elements (A = 100-200) which are not too close to the magic nuclei. This is illustrated by numerous experimental diagrams. The spectra of these elements were taken by means of a magnetic Compton spectrometer (resolution of 2%) which made it possible to take almost the whole γ-ray spectrum of the (nγ) reaction within the range 0.3 - 12 Mev under the same conditions. The ordinate of the diagrams on the basis

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Spectra of Gamma Rays Occurring in the Capture of Thermal Neutrons by Heavy Nuclei. I.

of which several peculiarities are studied within the range of low energies, is the quantity $\nu(E)$ - the number of photons per neutron capture event and per uniform energy range E (γ-quantum energy in Mev) instead of $\nu(E)H_Q$, as in the preceding papers. The absolute values of $\nu(E)$ were obtained by normalization with respect to the neutron binding energy. The following odd-odd nuclei were studied: Rh^{104}, $Ag^{108,110}$, In^{116}, $Sb^{122, 124}$, La^{140}, Eu^{152}, Ho^{166}, Tu^{170}, Ta^{182}, $Re^{186,188}$, $Ir^{192,194}$, and Au^{198} (Figs. 1 and 2), and the following even-even nuclei: Mo^{96}, Cd^{114}, $Sn^{116,118,120}$, Nd^{144}, Sm^{150}, $Gd^{156,158}$, Er^{168}, Hf^{178}, Pt^{196}, and Hg^{200}. The spectra under consideration covered the range 1 - 6 (or 7) Mev. A table lists the neutron binding energies B_n in nuclei with $A \sim 110$ (mean value of 6.7 Mev) and in nuclei with $A \sim 175$ (mean value of 6.2 Mev). Next, experimental and theoretical spectra are compared with one another. For their calculations the authors assumed a neutron binding energy of 6.4 Mev in odd-odd nuclei and of 7.6 Mev in even-even nuclei. The calculations were made

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Spectra of Gamma Rays Occurring in the Capture of Thermal Neutrons by Heavy Nuclei. I.

for two different laws of level density variation with the excitation energy: (1): $\varrho(u) = \varrho_0 \exp \sqrt{au}$ and (2): $\varrho(u) = \varrho_0 \exp(u/\tau)$. The comparison is separately made for odd-odd and even-even nuclei, and the effect of the energy gap in the level spectrum of even-even nuclei on the γ-ray spectrum in the range 0.8 - 4 Mev is discussed. The existence of this energy gap entails a considerable difference in the spectra of odd-odd and even-even nuclei. There are 8 figures, 1 table, and 6 references: 5 Soviet and 1 American.

SUBMITTED: August 28, 1959

Card 3/3

DEMIDOV, A.M. PEVZNER, M.I.

"The Main Trends of Work in some Low Power Research Reactors."

report presented at the Symposium on Programming and Utilization of Research Reactors, IAEA, Vienna, 16-21 Oct 1961.

33004
S/641/61/000/000/031/033
B102/B138

26.2246

AUTHORS: Groshev, L. V., Demidov, A. M., Pelekhov, V. I.

TITLE: Spectra of γ-rays accompanying thermal neutron capture by Mo, Nd, Ho, Tu and La nuclei

SOURCE: Krupchitskiy, P. A., ed. Neytronnaya fizika; sbornik statey. Moscow, 1961, 335 - 347

TEXT: This is a continuation of previous investigations of thermal (n,γ)-reactions (c.f. Groshev et al., Lecture at First Geneva Conference 1955); experimental apparatus and arrangement have already been described. This paper gives the results in great detail. Mo: A specimen of 1.4 kg total weight, consisting of disks 55 mm in diameter, was used to measure the spectrum in the 0.3-10 Mev range. Up to 80 % of the thermal neutrons were captured by Mo^{95}. Nd: Range 0.3 to 9 Mev, 200-g specimen of Nd_2O_3. 77 % of the spectrum is due to γ-transitions of Nd^{144}. The binding energy, B_n, of the last neutron in Nd^{144} was found to be 7.80 ± 0.02 Mev. Ho: Range 0.3 to 7.5 Mev, 50-g specimen of Ho_2O_3. The

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Spectra of γ-rays accompanying...

high-energy edge of the spectrum is at 6.15 Mev, $B_n > 6.15$ Mev. Tu: Range 0.3 to 7.5 Mev, 50 g specimen of Tu_2O_3. High energy edge: 6.56 ± 0.02 Mev; $B_n \geq 6.56$ Mev. La: Range, 0.3 to 7.5 Mev, 400-g La_2O_3 specimen containing no impurities of other rare earths. Lines previous found at 1.18, 0.74 and 0.44 Mev with impure specimens and attributed to La^{140} were found to be due to γ-transitions of Gd. B_n was $\geq 5.145 \pm 0.015$ Mev. This is somewhat higher than found by Johnson and Nier. The 5.145-Mev line is attributed to a transition to the ground state and the arguments for this assumption are discussed. There are 12 figures, 5 tables, and 8 references: 4 Soviet and 4 non-Soviet. The four references to English-language publications read as follows: B. B. Kinsey, G. A. Bartholomew. Canad. J. Phys. 31, 1051 (1953); G. A. Bartholomew, L. A. Higgs. Compilation of Thermal Neutron Capture Gamma Rays. Chalk River, Canada, AECL-669 (1958); W. H. Johnson, A. O. Nier. Phys. Rev. 105, 1014 (1957); P. Boskma, H. De Waard. Nucl. Phys., 14, 145 (1959).

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33005
S/641/61/000/000/032/033
B102/B138

5.5310

AUTHORS: Groshev, L. V., Demidov, A. M., Pelekhov, V. I.

TITLE: Determination of slight gadolinium and samarium impurities by gamma spectrum analysis with (n, γ) reactions

SOURCE: Krupchitskiy, P. A., ed. Neytronnaya fizika; sbornik statey. Moscow, 1961, 348-353

TEXT: Thermal neutron capture gamma rays can, in certain circumstances, be used for quantitative determination of rare-earth impurities, provided a magnetic Compton spectrometer of high resolution is available. The impurities to be determined must have large, and the substance in which they are contained, small, σ_n and B_n values. σ_n is the thermal neutron capture cross section and B_n is the binding energy of the last neutron. The method was tested by determining Sm and Gd impurities in other rare-earth substances. The minimum concentrations which can be determined with a Compton γ-spectrometer of 2 % resolution are given in the table. The 6.74- and 7.22-Mev lines, which are characteristic of Gd and Sm, have energies above the B_n value of most of the rare earths. Several spectra

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Determination of slight...

are given and discussed as examples. The method is limited in its application, due to the σ_n and B_n requirements given above and the necessity of using large specimens (50-100 g) in this type of spectrometer. There are 4 figures, 1 table, and 3 references: 1 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: G. A. Bartholomew, L. A. Higgs. Compilation of Thermal Neutron Capture Gamma Rays. Chalk River, Canada. AECL-669, 1958; G. Backstrom. Nucl. Instrum. and Methods, 4, 5 (1959).

Legend to the Table: (1) Element; (2) Impurity concentration.

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DEMIDOV, A.M.

Symposium on physical research with the acid of neutrons produced by reactors. Atom. energ. 10 no.3:287-288 Mr '61. (MIRA 14:3)
(Neutrons—Congresses) (Nuclear reactors—Congresses)

GROSHEV, L.V.; DEMIDOV, A.M.; IVANOV, V.A.; IVANENKO, V.I.; [illegible], V.I.

[illegible] levels of Gd^{156} and Gd^{158}. Dokl. AN SSSR 141 no.1:59-61 N '61. (MIRA 14:11)

1. Predstavleno akademikom L.A. Artsimovichem.
(Gadolinium--Isotopes)
(Quantum theory)

S/048/62/026/008/003/028
B163/B104

AUTHORS: Groshev, L. V., Demidov, A. M., Lutsenko, V. N., and Pelekhov, V. I.

TITLE: Spectra of γ-rays and internal conversion electrons from the reaction $Cd^{113}(n,\gamma)Cd^{114}$

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 8, 1962, 979 - 992

TEXT: The γ-spectra in the energy range from 0.4 to 9.5 Mev were measured in a magnetic Compton spectrometer giving a resolution of 0.3% for energies above 2 Mev and of 0.6% at E_γ = 1 Mev, described earlier by Groshev et al. (Izv. AN SSSR. Ser. fiz., 24, 791 (1960)). The spectrum of internal conversion electrons in the energy range from 20 kev to 3 Mev was measured in a magnetic beta spectrometer with a resolution of 0.6% at $E_e > 300$ kev and of 1% at lower electron energies, described earlier by Pelekhov and Malov (Izv. AN SSSR. Ser. fiz. 25, 1069 (1961)). The energy levels of Cd^{114} are of interest for investigating the lower levels in even-even nuclei. To measure the γ-spectrum, a metallic cadmium target consisting of the natural

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mixture of isotopes was bombarded with thermal neutrons. In the γ spectrum 132 lines were resolved, containing 37% of the total energy released by the neutron capture. To measure the internal conversion spectrum a cadmium oxide target of 0.8 mg/cm^2 thickness, enriched to 85% Cd^{113} on an aluminum backing foil was used. This spectrum contained 36 lines up to energies of 1.7 Mev. The energies, relative intensities, and internal conversion coefficients of the lines were tabulated. From these data, a level scheme was constructed assuming that the relatively intense lines with energies above 5 Mev correspond to transitions from the initial state formed by the neutron capture to the lower nuclear levels. The binding energy of the last neutron in Cd^{114} was found to be 9041 ± 3 kev. The characteristics of lowest levels at 558, 1134, 1209, 1283, 1306, 1364, 1732, 1841, 1958 kev above the ground state are discussed. The lowest of these levels are well known from earlier Coulomb excitation, β decay and (dp) reaction experiments. The 1306 kev conversion line is thought to correspond to a $0^+ - 0^+$ transition from the 1306 kev level to the ground state and the 1305 kev γ line is thought to belong to another level. For the levels at 1134 and 1209 kev the ratios of reduced branching probabilities are consistent with calculations for vibration models. It is concluded that the 1730, 1841, and

40867

S/048/62/026/009/001/011
B125/B186

21,7500

AUTHORS: Groshev, L. V., Demidov, A. M., Ivanov, V. A., Lutsenko, V.N., and Pelekhov, V. I.

TITLE: Spectra of γ rays and internal conversion electrons arising in the $(n\gamma)$-reaction on gadolinium isotopes

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 9, 1962, 1119-1133

TEXT: The spectra of the γ-rays that arise when thermal neutrons are captured by Gd^{155} (capture cross section 61000 ± 5000 barn) and Gd^{157} (capture cross section 240000 ± 12000 barn) were taken in the energy range 0.4 to 9 Mev. The inner conversion electron spectra were taken at electron energies of 20 kev to 3 Mev by magnetic spectrometers. The Gd_2O_3 specimens were enriched in Gd^{155} and Gd^{157}. The γ spectra measurements and the apparatus have been described by Groshev L. V. et al. (Izv. AN SSSR, Ser. fiz., 791 (1960)). The internal conversion electron spectra were determined using the same enriched gadolinium

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Spectra of γ rays and internal ...

isotopes as in the measurements of γ-radiation spectra. The internal conversion electron lines were separated from these spectra. Their intensity, the K-shell conversion coefficient α_K, the ratio α_K/α_L and the type of the transition are given. In measuring most of the levels of the Gd^{156} γ-transition scheme it has been assumed that the γ-lines with $E > (B_n - 3)$ Mev correspond to an initial state. This initial state arises when the neutron is captured onto lower levels of the nucleus. The levels within the energy gap of 2.1 Mev (for Gd^{156}) and 1.7 Mev (for Gd^{158}) are described separately. Most of the levels above 1621 kev were determined from the transitions out of the initial state. The Gd^{158} γ-transition scheme was established on the same basic considerations as the Gd^{158} γ-transition scheme. The levels with 1188, 1268, 1405, 1521, 1373, 1454 kev are described separately. The lines contained in the spectra of internal conversion electrons with 496, 669, 687, 700 and 707 kev for Gd^{156} and with 438, 457, 702 and 746 kev

Spectra of γ rays and internal ...

for Gd^{156} could not be detected in the γ-ray spectra. The transitions with 526, 613 and 674 kev in Gd^{156} and 538 kev in Gd^{158} show increased conversion. There are 5 figures and 6 tables.

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GROSHEV, L.V.; DEMIDOV, A.M.

Determining the burn-out of fuel rods by means of a magnetic gamma-spectrometer. Atom. energ. 13 no.5:458-466 N '62. (MIRA 15:11)

(Nuclear fuels)
(Gamma-ray spectrometry)

S/120/63/000/001/001/072
E032/E314

AUTHOR: Demidov, A.M.

TITLE: Modern methods of gamma-spectroscopy

PERIODICAL: Pribory i tekhnika eksperimenta, no. 1, 1963, 5 - 20

TEXT: This is a review paper covering the period up to and including 1962 and based on 76 published references (24 Soviet bloc). The first part reviews the various types of single- and multiple-crystal NaI(Tl) spectrometers. The second part is concerned with magnetic spectrometers, including pair spectrometers, Compton spectrometers and photo-electron and internal-conversion spectrometers. The final section is concerned with bent and plane crystal diffraction spectrometers. There are 18 figures and 4 tables.

ASSOCIATION: Institut atomnoy energii AN SSSR (Institute of Atomic Energy of the AS USSR)

SUBMITTED: July 16, 1962

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S/903/62/000/000/041/044
B102/B234

AUTHORS: Groshev, L. V., Demidov, A. M., Lutsenko, V. N., Pelekhov, V. I.

TITLE: Radiative properties of the Cd^{114} lower levels

SOURCE: Yadernyye reaktsii pri malykh i srednikh energiyakh; trudy Vtoroy Vsesoyuznoy konferentsii, iyul' 1960 g. Ed. by A. S. Davydov and others. Moscow, Izd-vo AN SSSR, 1962, 548-550

TEXT: The authors investigated the $Cd^{113}(n,\gamma)Cd^{114}$ reaction induced by thermal neutrons and measured the γ-ray spectra in the range 0.3-9.5 Mev as well as the conversion electron spectra in the range 0.3-2 Mev. The measurements were made with a new type of Compton magnetic spectrometer with 0.3% resolution at $h\nu > 2$ Mev and with a special conversion spectrometer with 0.6% resolution. Energies, characteristics and coefficients of the transitions were determined (Table) for emission of γ-quanta (I) and internal conversion electrons (II). The results obtained are discussed on the basis of the vibration model (Phys. Rev. 103, 1033, 1956). It is assumed that the levels 1135, 1207 and 1283 kev form a two-phonon triplet; it is, however, not impossible that the 0^+ level of 1135 kev is due to the excitation of a

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Radiative properties of the...

S/903/62/000/000/041/044
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neutron pair. The 1848-kev level, far away from the triplet, is a 0^+ level (Cohen, Price, Private Communication). The 552, 650 and 1207 kev levels have the reduced E2 transition probabilities of 36, 60 and 0.76 Weisskopf units which agrees with the collective nature of the 2^+-2^+ levels according to the vibration model. There is 1 table.

ASSOCIATION: Institut atomnoy energii im. I. V. Kurchatova AN SSSR
(Institute of Atomic Energy imeni I. V. Kurchatov AS USSR)

E, kev	$\alpha_K \cdot 10^3$ I	α_K/α_{L+M} II	
557	4,7*	5	E2
650	3,1	5	E2
703	3,6	—	E2, or M1, or E2+M1
726	2,3	—	E2, or M1, or E2+M1
748	2,1	—	E2, or M1, or E2+M1
808	2,8	—	E2, or M1, or E2+M1
1135	>20	—	0^+—0^+
1305	>1000	6,5	0^+—0^+

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GROSHEV, L.V.; DEMIDOV, A.M.; PELEKHOV, V.I.

Gamma-ray spectra generated in neutron capture by heavy nuclei.
Trudy Inst.fiz.AN Gruz.SSR 8:81-94 '62. (MIRA 16:2)
(Gamma-ray spectrometry) (Neutrons--Capture)

AM4016110 BOOK EXPLOITATION S/

Demidov, Anatoliy Mikhaylovich

Methods of investigating nuclear radiation during the radiation capture of thermal neutrons (Metody* issledovaniya izlucheniya yader pri radiatsionnom zakhvate teplovy*kh neytronov) Moscow, Gosatomizdat, 1963. 73 p. illus., biblio. 4000 copies printed. Editor: Z. D. Andreyenko; Technical editor: N. A. Vlasova; Proofreader: L. I. Cherevatenko

TOPIC TAGS: nuclear radiation, thermal neutrons, neutron capture, gamma rays, magnetic spectrometer, diffraction spectrometer, phonons, internal conversion, NaI(Tl) crystals, collisions, angular correlation, lifetimes

PURPOSE AND COVERAGE: The basic purpose of this book is to acquaint the reader with existing methodologic developments and to illustrate them by examples of the special characteristics and possibilities of the mentioned investigations.

TABLE OF CONTENTS:

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S/048/63/027/002/009/023
B104/B180

AUTHORS: Groshev, L. V., Demidov, A. M., Ivanov, V. A., Lutsenko, V. N., and Pelekhov, V. I.

TITLE: The levels of the Sm^{150} nucleus excited by the (n,γ) reaction

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 27, no. 2, 1963, 216 - 227

TEXT: The γ-spectrum of Sm^{150} was investigated with a magnetic Compton spectrometer with a resolution of 0.3% in the range 0.3 - 8 Mev. The spectrum of internal conversion electrons was investigated with a magnetic spectrometer with resolution 0.6%. From the results, represented in two large figures and one table, the level scheme of Sm^{150} is constructed. The levels with 334, 740, 775, 1047, 1071, 1167, 1256 and 1278 kev are discussed in detail and the Sm^{150} level is compared with that of Gd^{152} (Fig. 5). It is shown that corresponding levels of Sm^{150} and Gd^{152} have similar radiation properties. Further the Gd^{152} transition between the

The levels of the Sm^{150} nucleus...

2^+ levels with 929 and 344 kev have an exaggerated conversion ($\alpha_K = 0.026$) which is more than for the M1 transition. It may be due to the contribution of an E0-transition. The analogous Sm^{150} transitions between the 2^+ levels with 1047 and 334 kev has a conversion factor of $\alpha_K = 0.0074$, which corresponds to a non-forbidden M1 transition. As type $2^+ \longrightarrow 2^+$ M1-transitions are forbidden in heavy even-even nuclei, it is assumed that E0 and E2 transitions make a small contribution. There are 5 figures and 5 tables.

Fig. 5. Comparison of the Sm^{150} and Gd^{152} level schemes.

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The levels of the Sm^{150} nucleus...

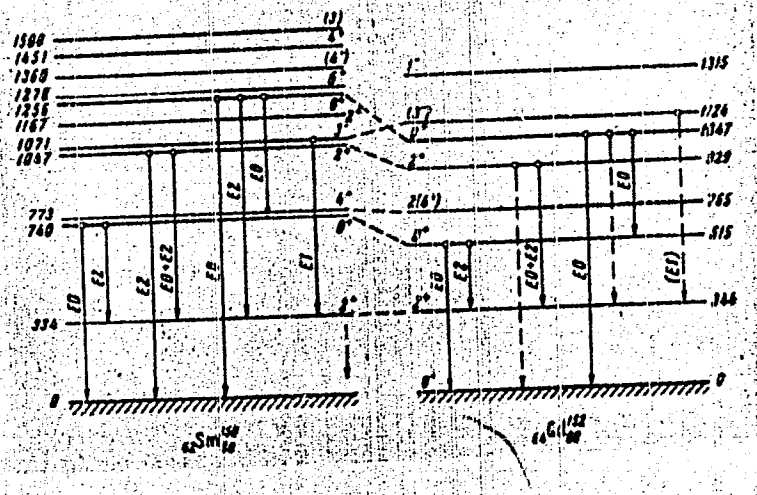

Fig. 5

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DEMIDOV, A.M.

Modern gamma-spectroscopy methods; review. Prib. i tekh. eksp. 8 no.1:5-20 Ja-F '63. (MIRA 16:5)

1. Institut atomnoy energii AN SSSR.
(Gamma-ray spectrometry)

GROSHEV, L.V.; DEMIDOV, A.M.; PELEKHOV, V.I.

[Spectra of gamma rays accompanying the capture of thermal neutrons by Mo, Nd, Ho, Tu, and La nuclei] Spektry γ - luchei, soprovozhdaiushchikh zakhvat teplovykh neitronov iadrami Mo, Nd, Ho, Tu, i La. Moskva, Glav. upr. po ispol'zovaniiu atomnoi energii, 1960. 19 p. (MIRA 17:2)

GROSHEV, L.V.; DEMIDOV, A.M.; IVANOV, V.A.; LUTSENKO, V.N.; PELEKHOV, V.I.

Spectra of gamma rays and internal conversion electrons emitted in the capture of thermal neutrons by mercury nuclei. Izv. AN SSSR. Ser. fiz. 27 no.11:1377-1391 N '63. (MIRA 16:11)

1. Institut atomnoy energii im. I.V. Kurchatova.

GROSHEV, L. V.; DEMIDOV, A. M.; IVANOV, V. A.; LUTSENKO, V. N.; PELEKHOV, V. I.

"Gamma Rays and Electrons of Internal Conversion from the Reaction $Hf^{177}(n,\gamma)Hf^{178}$."

report submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22 Feb 64.

IAE (Inst Atomic Energy)

GROSHEV, L. V.; DEMIDOV, A. M.; KOTEL'NIKOV, G. A.; LUTSENKO, V. N.

"Gamma-Rays from the Reaction $Sc^{45}(n,\gamma)Sc^{46}$."

"The Spectrum of Gamma Rays from the Reaction $Fe^{56}(n,\gamma)Fe^{57}$."

reports submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22 Feb 64.

IAE (Inst Atomic Energy, AS USSR)

L 58345-65 EWT(m)/EPF(c)/EPF(n)-2/EWG(m)/EPR Pr-4/Ps-4/Pu-4 NW
ACCESSION NR: AT5010453 UR/3136/64/000/725/0001/0025

AUTHOR: Demidov, A. M.

TITLE: Equipment of some experimental channels of research reactors in the Soviet Union

SOURCE: Moscow. Institut atomnoy energii. Doklady, no. 725, 1964. Oborudovaniye nekotorykh eksperimental'nykh kanalov nauchno-issledovatel'skikh reaktorov Sovetskogo Soyuza, 1-25

TOPIC TAGS: research reactor, reactor channel, biological dosimetry, thermal neutron, cold neutron, polarized neutron, radiation physics, neutron spectrometer, neutron monochromater

ABSTRACT: The article describes the devices and physical characteristics of some channels of the research reactors of the Soviet Union. The reactor types involved are VVRM (Kiev and Leningrad), IRT (IAE im. I. V. Kurchatova (Institute of Atomic Energy), Riga, Minsk, and Tbilisi), VVR-2 (IAE im. I. V. Kurchatova), VVRS

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(Tashkent), TVR (Institute of Experimental and Theoretical Physics in Moscow), and SM-2 (Melekess). In addition to data on the channels and their equipment, the article deals with auxiliary equipment such as neutron spectrometers and monochromators, neutron polarizers, dosimeters, the indium-gallium loop, and transporters for radioactive substances. References are given to the original papers from which the data were gathered. It is pointed out in the conclusion that the preferred future trend in research reactor design should follow the path of increasing the channels and specializing their design in accordance with their ultimate purpose.
'The author thanks Yu. I. Bregadze, M. G. Zemlyanov, V. T. Korneyev, V. I. Mostovoy, B. A. Obinyakov, P. T. Prokof'yev, Ye. I. Firsov, and Yu. F. Chernilin for help in compiling the report.'
Original article has 6 figures and 3 tables.

ASSOCIATION: none

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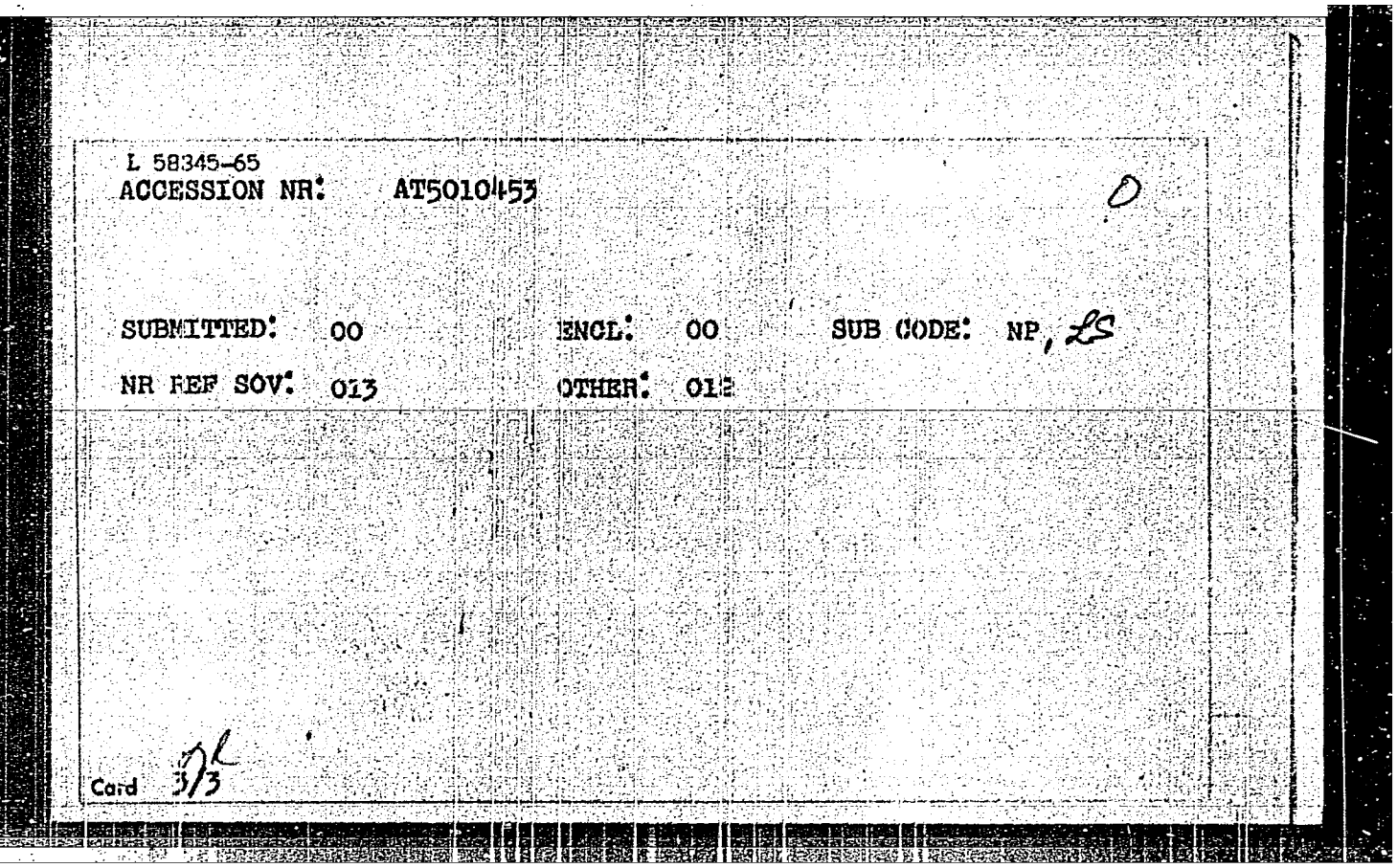

L 58345-65
ACCESSION NR: AT5010453

SUBMITTED: 00 ENCL: 00 SUB CODE: NP, LS

NR REF SOV: 013 OTHER: 012

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ACCESSION NR: AP4042958 S/0048/64/028/007/1118/1123

AUTHOR: Groshev, L.V.; Demidov, A.M.; Kotel'nikov, G.A.; Lutsenko, V.N.; Pelekhov, V.I.

TITLE: The levels of rhodium 104 excited in thermal neutron capture /Report, 14th Annual Conference on Nuclear Spectroscopy held in Tibilisi 14-21 Feb 1964/

SOURCE: AN SSSR. Izv.Seriya fizicheskaya, v.28, no.7, 1964, 1118-1123

TOPIC TAGS: neutron capture, gamma ray spectrum, decay scheme, electron spectrum, rhodium

ABSTRACT: The γ-ray spectrum of Rh^{104} excited by thermal neutron capture in Rh^{103} was recorded with a magnetic Compton spectrometer with a resolution of 0.3%. The spectrometer and the experimental technique are described elsewhere (L.V.Groshev, A.M.Demidov, V.N.Lutsenko and A.F.Malov, Izv.AN SSSR,Ser.fiz.24,791,1960). Fifty-one lines were observed with energies from 4.885 to 6.998 MeV and intensities from 9×10^{-5} to 2.3×10^{-2} photons per capture. The internal conversion spectrum of Rh^{104} was observed with a magnetic spectrometer having a resolution of 0.6%. Again the instrument and experimental techniques are described elsewhere (V.I.Pelekhov and

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ACCESSION NR: AP4043958

A.F.Malov, Izv.AN SSSR,Ser.fiz.25,1069,1961). The β-spectrum was examined from 60 to 2500 keV, but the large continuous background prevented lines from being observed at energies greater than 200 keV. Below this energy ten internal conversion lines were distinguished. The most intense line (74 keV) was assumed to be the K conversion line of the M1 transition from the 97 keV isomeric state (R.C.Greenwood,Phys. Rev.129,345,1963) and to have the theoretical value of the internal conversion coefficient. From this assumption, and from the relative intensities of the γ-rays obtained by private communication from O.Schult, the internal conversion coefficients of six other lines were calculated and their multipole order determined. Five lines were found to be due to E1 transitions and one to an M1. One of these assignments is in conflict with a previous assignment by A.S.Melioranskiy, L.F.Kalinkin and I. V.Ratulin (Vozbuzhdenny*ye sostoyaniya Rh^{104}. Izd.Mosk.gos.un-ta 1963). If one assumes that the most energetic of the observed neutron capture γ-rays is due to direct transition to the ground state, one finds that the calculated neutron binding energy is in good agreement with the value obtained from the (d,p) reaction, and that of the 30 levels that lie within the region that has been explored by means of the (d,p) reaction, all but 5 coincide with previously known states. A striking feature of the γ-ray spectrum is that the high-energy lines resulting from transitions to levels lying below 0.8 MeV are generally considerably lower energy than the

less energetic lines. This can be explained by a hypothesis of N.Starfelt (Preprint, 1963) involving the M1 giant resonance. The present authors offer an alternative explanation based on the assumption that the neutron is captured in an s state. E1 transitions to the low-lying levels would then be multiparticle transitions, and thus weak, and M1 transitions would be forbidden by the orbital angular momentum selection rule for the neutron. A decision between the two explanations might be reached by determining the character of the transitions concerned, for these should be M1 transitions in the one case and E1 transitions in the other. Orig.art.has: 3 figures and 2 tables.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00

SUB CODE: NP NR REF SOV: 008 OTHER: 010

ACCESSION NR: AP4042970 S/0048/64/028/007/1234/1243

AUTHOR: Groshev,L.V.; Demidov,A.M.; Kotel'nikov,G.A.; Lutsenko, V.N.

TITLE: Spectrum of gamma-rays from neutron capture by iron 56 /Report, 14th Annual Conference on Nuclear Spectroscopy held in Tibilisi 14-21 Feb 1964/

SOURCE: AN SSSR. Izv. Seriy fizicheskaya, v.28, no.7, 1964, 1234-1243

TOPIC TAGS: neutron capture, gamma-ray spectrum, iron

ABSTRACT: The γ-ray spectrum excited in thermal neutron capture by natural iron was recorded with a magnetic Compton spectrograph that afforded a resolution of 0.3% above 2 MeV and 0.6% at 1 MeV, and is described elsewhere (L.V.Groshev, A.M. Demidov, V.N.Lutsenko and A.F.Malov,Izv.AN SSSR,Ser.fiz.24,791,1960). Sixty γ-rays were observed with energies from 1.264 to 10.038 MeV and intensities from 7×10^{-4} to 0.215 photons per capture. The assignment of these γ-rays to the various iron isotopes is discussed, and it is concluded that 44 of them arise from transitions in Fe^{57} induced by neutron capture by Fe^{56}. The hardest γ-ray assigned to Fe^{57} has an energy of 7.642 MeV. The spectrum was analyzed, and a level scheme is presented for Fe^{57} which includes, in addition to the 7.643 MeV $1/2^-$ state into which the

neutron is captured, 21 states with energies not greater than 4.688 MeV. The states are compared with states known from (p,p') and (d,p) reactions, and spins and parities are assigned to 10 of them. From a consideration of intensity sums it is concluded that the scheme includes 87% of all the γ-ray transitions of Fe^{57} excited by neutron capture. The intensities of the γ-rays originating in the initial state are compared with the reduced neutron widths and spectroscopic factors obtained from the (d,p) reaction. The comparison is performed in the same way that similar comparisons have been previously performed for other nuclei (L.V.Groshev, A.M.Demidov, V.N.Lutsenko and V.I.Pelekhov, Doklady* sovetskikh ucheny*kh na Vtoroy mezhdunarodnoy konferentsii po mirnomu ispol'zovaniyu atomnoy energii /Reports of Soviet scientists to the 2nd International Conf. on the Peaceful Use of Atomic Energy/ Yadernaya fizika 1,281.Atomizdat,1959). Although some correlation is found, it is not striking. It is suggested that the poor correlation may be due to a complex structure of the wave function of the initial state of Fe^{57} produced by neutron capture by Fe^{56}. The γ-decay of various of the states of Fe^{57} is discussed in some detail in relation to numerous calculations and experimental data in the literature. Orig.art.has: 4 figures and 3 tables.

ACCESSION NR: AP4042971 S/0048/64/028/007/1244/1254

AUTHOR: Groshev,L.V.; Demidov,A.M.; Ivanov,V.A.; Lutsenko,V.N.; Pelekhov,V.I.

TITLE: Gamma-rays and internal conversion electrons from neutron capture of hafnium 177 [Report, 14th Annual Conference on Nuclear Spectroscopy held in Tibilisi 14-21 Feb 1964]

SOURCE: AN SSSR. Izv. Seriya fizicheskaya, v.28, no.7, 1964, 1244-1254

TOPIC TAGS: neutron capture, gamma-ray spectrum, electron spectrum, hafnium

ABSTRACT: The γ-ray spectrum excited by thermal neutron capture by natural hafnium was recorded with a magnetic Compton spectrometer with a resolution of 0.3% above 2 MeV and 0.6% at 1 MeV (see L.V.Groshev, A.M.Demidov, V.N.Lutsenko and A.F. Malov,Izv.AN SSSR,Ser.fiz.24,791,1960). The internal conversion spectrum of Hf^{178} was observed for a target containing 89% Hf^{177}. The magnetic spectrometer employed had a resolution of 0.6% and is described elsewhere (V.I.Pelekhov and A.F.Malov, Izv.AN SSSR,Ser.fiz.25,1069,1961). A level scheme for Hf^{178} is presented. Sixty-seven γ-ray lines were observed with energies from 1.066 to 7.526 MeV and intensities from 1.8×10^{-4} to 6.4×10^{-2} photons per capture. The assignment of these

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ACCESSION NR: AP4042971

γ-rays to the various hafnium isotopes is discussed at length. Of the 18 lines recorded with energies less than 1.5 MeV, all but 3 were observed with enriched material by R.K.Smither (Phys.Rev.129,1691,1963) and are ascribed to Hf^{178}. The relative intensities of these lines were largely in agreement with those found by Smither; there were discrepancies, however, and in these cases the authors prefer their own data because of the higher resolution of their spectrometer. It is concluded after an involved discussion that of the remaining lines, those with energies greater than 6.1 MeV can be safely attributed to Hf^{178} and those with lower energies cannot. Forty-two internal conversion lines were observed with energies from 82 to 1587 keV. Internal conversion coefficients were calculated for 23 of these lines, but multipolarities were assigned only to the 9 least energetic because of the absence of any suitable standard lines of high energy. The 260 keV K conversion line of the 325 keV γ-transition was assumed to be due to an E2 transition for calculating the internal conversion coefficients, and Smither's γ-ray intensities were employed. The level scheme given for Hf^{178} comprises, in addition to the 7.619 MeV 3^-, 4^- levels into which the neutron is captured, 15 states with excitations not greater than 1.513 MeV. The scheme is in general similar to that given by Smither (loc.cit.), but there are differences that are discussed in detail. Some spin and parity assignments are in doubt, and more experimental work is de-

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